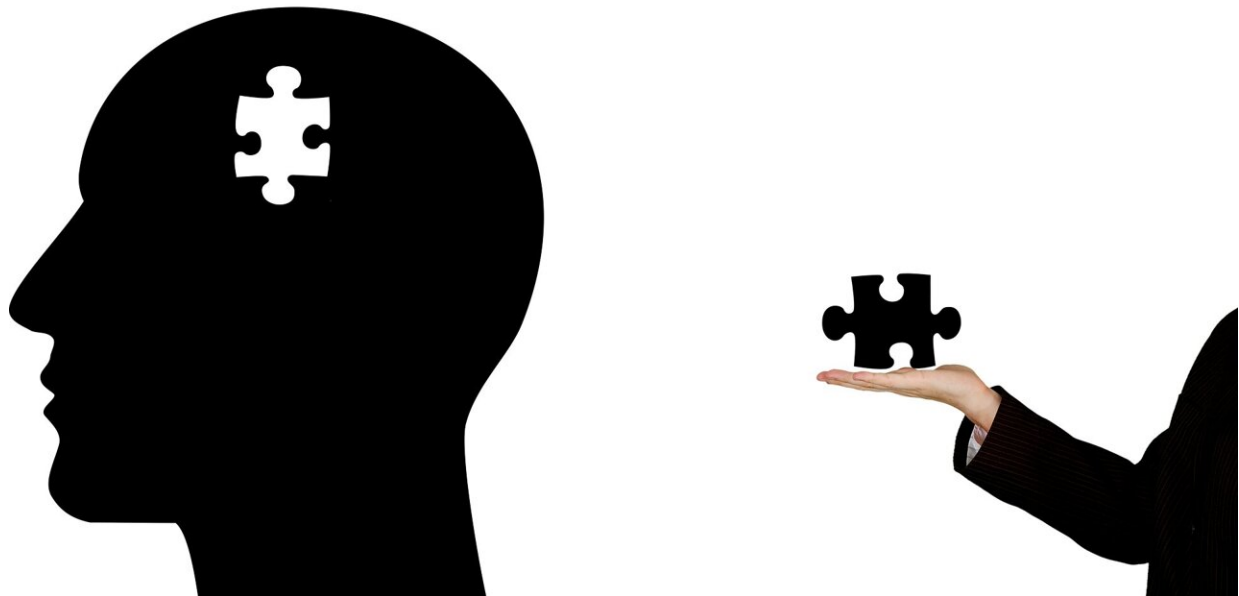


Insights into brain connectivity may help clinicians choose between talk therapy and medications for depression

April 6 2023, by Jennifer Johnson McEwen



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Researchers from Emory University are continuing to gain a deeper understanding of factors that help predict how well three first-line treatments work for adults diagnosed with major depressive disorder (MDD).

The primary goal of the study, called PReDICT (Predictors of Remission in Depression to Individual and Combined Treatments), was to better predict which individuals with no history of [clinical depression](#) treatment improve with the use of either one of two antidepressant medications (ADM) or with talk therapy, known as cognitive behavior therapy (CBT).

The latest results, focused on the alterations in brain circuit connectivity associated with depressive symptom changes, are published online and in the March print issue of the *American Journal of Psychiatry*.

The study provided insight into [brain connectivity](#) among patients who substantially improved after receiving either CBT or ADM treatment. Overall, they found there were alterations in the way different parts of the brain communicated with each other and some of these changes were common to all patients who improved, while others were specific to the type of treatment they received.

"Clinical depression is the leading cause of disability and loss of enjoyment of life among psychiatric disorders. Despite advances in [personalized medicine](#) for other diseases like cancer, treatment for depression remains largely based on trial and error and the preferences of the treating mental health professional," says one of the PReDICT principal investigators W. Edward Craighead, Ph.D., J. Rex Fuqua Professor of Psychiatry and Behavioral Sciences, Emory University School of Medicine.

"PReDICT is helping us better understand how different regions of the brain connect and respond to different treatments, so we can develop critically-needed methods for a more personalized approach to treating depression."

Craighead co-leads the PReDICT study with former Emory colleague

Helen S. Mayberg, MD, now a professor at the Icahn School of Medicine at Mount Sinai, and Boadie W. Dunlop, MD, Emory psychiatry professor and director of the Emory Mood and Anxiety Disorders Program.

A major goal of the study was to determine the shared and unique changes in brain resting state [functional connectivity](#) (RSFC) between patients with [major depressive disorder](#) (MDD) who improved with CBT versus with ADM. RSFC is a type of brain imaging using [functional magnetic resonance](#) imaging (fMRI) to measure connectivity between different regions of the brain while an individual is at rest and not performing any specific cognitive, emotional or motor task.

PReDICT randomly assigned 344 adult study participants ages 18–65 with MDD, who had not previously been treated, to 12 weeks of treatment with CBT or one of two ADMs, escitalopram or duloxetine. Treatment in the study continued for two years or until the participants chose to stop in collaboration with a mental health professional. The researchers evaluated the efficacy of the treatments and their relative effectiveness in an attempt to see which treatment worked better for which people with depression.

There were no differences in the relative clinical outcomes among the three front-line treatments for never treated depressed participants, though the level of remission (~47%) was slightly higher than in those studies including previously depressed patients (remission ~30%). Overall, PReDICT found about 25%–30% of participants did not respond to either or both treatments and may need to seek an alternative biological or psychological intervention.

Mayberg noted both CBT and ADM groups of participants exhibited a reduction in the functional connectivity between an important emotion processing center (the subcallosal cingulate cortex) and a part of the

primary motor cortex, giving rise to the notion that regardless of the treatment, there is a common change in movement initiation and capacity. In other regions, CBT was associated with increases in RSFC while ADM treatment was associated with RSFC decreases.

According to Dunlop, one of the study's important findings showed CBT resulted in significant increases in the way different parts of the brain communicated with each other. Specifically, the study showed there was an increase in the RSFC between two key parts of the brain known as the executive control network and the dorsal attention network. Craighead also notes this finding is important because it suggests that CBT may have a more profound effect on the [brain](#) than previously realized, and it could be a promising treatment option for individuals suffering from depression.

Although the patient samples were fairly large for this study and relatively diverse, the research investigators noted it is still uncertain if these changes in connectivity will be seen in other groups of depressed patients or in different parts of the world, and more research is needed to confirm these findings.

The PReDICT team concluded, "Our findings reinforce that people who are depressed should not assume they are doomed to never improve if they do not respond to ADM or CBT from a mental health specialist. They may want to consider an alternative of psychotherapy or ADM or, if they do not respond to either or both treatments, they may need to seek an alternative biological or psychological intervention."

More information: Boadie W. Dunlop et al, Shared and Unique Changes in Brain Connectivity Among Depressed Patients After Remission With Pharmacotherapy Versus Psychotherapy, *American Journal of Psychiatry* (2023). [DOI: 10.1176/appi.ajp.21070727](https://doi.org/10.1176/appi.ajp.21070727)

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